

II. Amendments to the Claims

This listing of claims replaces without prejudice all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A fluid radiation treatment system having a direction of fluid flow, the system comprising:

a surface configured to be disposed substantially parallel to a direction of fluid flow; and

two mixing elements disposed with respect to said surface such that each mixing element is configured to generate at least one fluid vortex adjacent to the surface, downstream of the mixing element, at least one mixing element having a first normal located at a centroid thereof, the two mixing elements being oppositely angled with respect to a plane passing through the longitudinal axis of the surface, and

the surface having a second normal which intersects the first normal at the centroid,

wherein the first normal, the second normal, and the direction of fluid flow are in a non-planar relationship.

2. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein each mixing element comprises a leading edge.

3. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein each mixing element comprises a trailing edge.

4. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein each mixing element comprises a leading edge and a trailing edge.

5. (Withdrawn) The fluid radiation treatment system defined in claim 4, wherein the leading edge and trailing edge are substantially parallel.

6. (Withdrawn) The fluid radiation treatment system defined in claim 5, wherein the leading edge and the trailing edge are interconnected by a wing tip edge.

7. (Withdrawn) The fluid radiation treatment system defined in claim 6, wherein the wing tip edge comprises an edge substantially parallel to the direction of fluid flow.

8. (Previously Presented) The fluid radiation treatment system defined in claim 4, wherein the leading edge and the trailing edge are non-parallel.

9. (Withdrawn) The fluid radiation treatment system defined in claim 8, wherein the one of the leading edge and the trailing edge is substantially perpendicular to the direction of fluid flow.

10. (Withdrawn) The fluid radiation treatment system defined in claim 2, wherein the leading edge comprises a substantially curved edge.

11. (Previously Presented) The fluid radiation treatment system defined in claim 2, wherein the leading edge comprises a substantially straight edge.

12. (Withdrawn) The fluid radiation treatment system defined in claim 3, wherein trailing edge comprises a substantially curved edge.

13. (Withdrawn) The fluid radiation treatment system in claim 3, wherein the trailing edge comprises a substantially straight edge.

14. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein the at least one mixing element comprises a planar surface.

15. (Withdrawn) The fluid radiation treatment system defined in claim 1, wherein the at least one mixing element comprises a curved surface.

16. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein the at least one mixing element comprises an apex portion.

17. (Withdrawn) The fluid radiation treatment system defined in claim 16, wherein the apex portion is oriented to point substantially upstream with respect to the direction of fluid flow.

18. (Previously Presented) The fluid radiation treatment system defined in claim 16, wherein the apex portion is oriented to point substantially downstream with respect to the direction of fluid flow.

19. (Currently Amended) The fluid radiation treatment system defined in claim 1, wherein the two mixing

elements comprise a first mixing element and a second element separated from said first mixing element.

20. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the first mixing element and the second mixing element are substantially mirror images of one another.

21. (Withdrawn) The fluid radiation treatment system defined in claim 19, wherein the first mixing element and the second mixing element are substantially non-mirror images of one another.

22. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the first mixing element comprises a first leading edge and a first trailing edge.

23. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the second mixing element comprises a second leading edge and a second trailing edge.

24. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the first

mixing element comprises a first leading edge and a first trailing edge, and the second mixing element comprises a second leading edge and a second trailing edge.

25. (Previously Presented) The fluid radiation treatment system defined in claim 24, wherein at least one of the first leading edge and the second leading edge comprises a substantially straight edge.

26. (Previously Presented) The fluid radiation treatment system defined in claim 24, wherein both of the first leading edge and the second leading edge comprise a substantially straight edge.

27. (Withdrawn) The fluid radiation treatment system defined in claim 24, wherein at least one of the first leading edge and the second leading edge comprises a substantially curved edge.

28. (Withdrawn) The fluid radiation treatment system defined in claim 24, wherein both of the first leading edge and the second leading edge comprise a substantially curved edge.

29. (Withdrawn) The fluid radiation treatment system defined in claim 24, wherein the first trailing edge and the second trailing edge are integral such that the first mixing element and the second mixing element are interconnected.

30. (Previously Presented) The fluid radiation treatment system defined in claim 24, wherein the first trailing edge and the second trailing edge are in spaced relation to define an opening between the first mixing element and the second mixing element.

31. (Withdrawn) The fluid radiation treatment system defined in claim 24, wherein the first leading edge and the second leading edge are integral such that the first mixing element and the second mixing element are interconnected.

32. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the first mixing element comprises a first apex portion.

33. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the second mixing element comprises a second apex portion.

34. (Previously Presented) The fluid radiation treatment system defined in claim 19, wherein the first mixing element comprises a first apex portion and the second mixing element comprises a second apex portion.

35. (Previously Presented) The fluid radiation treatment system defined in claim 32, wherein the first apex portion is oriented substantially downstream with respect to the direction of fluid flow.

36. (Previously Presented) The fluid radiation treatment system defined in claim 32, wherein the second apex portion is oriented substantially downstream with respect to the direction of fluid flow.

37. (Previously Presented) The fluid radiation treatment system defined in claim 34, wherein the first apex portion and the second apex portion are oriented substantially downstream with respect to the direction of fluid flow.

38. (Withdrawn) The fluid radiation treatment system defined in claim 32, wherein the first apex portion is

oriented substantially upstream with respect to the direction of fluid flow.

39. (Withdrawn) The fluid radiation treatment system defined in claim 33, wherein the second apex portion is oriented substantially upstream with respect to the direction of fluid flow.

40. (Withdrawn) The fluid radiation treatment system defined in claim 34, wherein the first apex portion and the second apex portion are oriented substantially upstream with respect to the direction of fluid flow.

41. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein the at least one mixing element comprises a plane.

42. (Previously Presented) The fluid radiation treatment system defined in claim 1, wherein the at least one mixing element comprises a wedge.

43. (Currently Amended) A fluid radiation treatment system comprising:

two mixing elements configured for mixing a flow of fluid having a direction of fluid flow, each mixing element comprising a surface having a first normal which is:

(i) acutely angled with respect to a first plane having a second normal substantially perpendicular to the direction of fluid flow; and

(ii) acutely angled with respect to a second plane that is parallel to the direction of fluid flow, that passes through a center of at least one of the mixing elements, and that is orthogonal to the first plane,

the two mixing elements being symmetrically disposed with respect to the second plane.

44. (Currently Amended) A fluid radiation treatment system comprising:

at least one mixing element for mixing a flow of fluid having a direction of fluid flow, the at least one mixing element comprising:

a surface having a normal which is acutely angled with respect to each of two planes which are orthogonal to one another, each plane intersecting on a line substantially parallel to the direction of fluid flow, at least one of said two planes passing through a center of the
at least one mixing element;

the surface having a triangular shape

consisting essentially of a leading edge, a trailing edge, a base, and an apex at the intersection of the leading edge and the trailing edge.

45. (Currently Amended) An ultraviolet radiation water treatment system comprising:

at least one mixing element for mixing a flow of water having a direction of fluid flow, the at least one mixing element comprising:

a surface having a normal which is acutely angled with respect to a first plane and a second plane which is orthogonal to the first plane, the first plane and the second plane intersecting on a line substantially parallel to the direction of fluid flow, at least one of said first and second planes passing through a center of the at least one mixing element.

Claim 46. (Cancelled)

47. (Previously Presented) The fluid radiation treatment system defined in claim 1, further comprising a radiation source module coupled to said surface.

Claims 48-51. (Cancelled)